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The review of the achieved degree of sustainable development in South Eastern Europe—The use of linear regression method

Mirjana Golusin[a,*], Olja Munitlak Ivanovic[b], Natasa Teodorovic[c]

[a] Educons University, Vojvode Putnika st. bb, 21013 Sremska Kamnica, Serbia
[b] Faculty of Business in Services, Vojvode Putnik st. bb, 21013 Sremska Kamenica, Serbia
[c] Faculty of Entrepreneurial Management, Modene st. 5, 21000 Novi Sad, Serbia

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ABSTRACT

The need for preservation and adequate management of the quality of environment requires the development of new methods and techniques by which the achieved degree of sustainable development can be defined as well as the laws regarding the relationship among its subsystems. Main objective of research is to point to a strong contradiction between the development of ecological and economic subsystems. In order to improve previous research, this study suggests the use of linear evaluation, by which it is possible to determine the exact degree of contradiction between these two subsystems and to define the regularities as well as the deviations. Authors present the essential steps that were used. Conducted by the method of linear regression this research shows a significant negative correlation between ecological and economic subsystem indicators, whereas its value R^2 0.58 proves the expected contradiction that exists between the two previously mentioned subsystems. By observing the sustainable development as a two-dimensional system that includes ecological and economic indicators, the authors suggest the methodology to modelling the relationship between economic and ecological development as an orthogonal distance between the degree of the current state measured by the relation between economic and ecological indicators of sustainable development and the degree which was obtained in a traditional way. The method used in this research proved to be extremely suitable for modelling the relationship between ecological and economic subsystems of sustainable development. This research was conducted on a repeated sample of countries of South East Europe by including the data for France and Germany, being two countries on the highest level of development in the European Union.

Contents

1. Introduction

Sustainable development represents a conceptually new approach of development that differs very much, both theoretically and practically, from the traditional ways of determining and measuring the achieved degree of sustainable development of certain countries, regions or global development as a whole. All the countries that accepted to follow this path as their own, are developing an adequate strategic model of planning, implementation and control of their own development so that in the world there is no universal approach to realize the sustainable development [1]. It has been noticed by time that some countries and regions show certain similarities and therefore the sustainable

* Corresponding author. Tel.: +381 64 205 7261.
E-mail addresses: mirjanagolusin@sbb.rs (M. Golusin), oljaivanovic@eunet.rs (O.M. Ivanovic), natasa.teodorovic@fpmbk.edu.rs (N. Teodorovic).

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development in these places could be followed by using the similar methods, however, there is no unique scientific consensus regarding this matter. Because of this, the authors agree with the fact that it is necessary to develop and evaluate the different models that could be useful and efficient in the field of monitoring the sustainable development in some countries and regions [2].

In accordance with what was previously said, the authors continue their research that started in 2005 and which consists of measuring and comparing the indicators of sustainable development in the region of South Eastern Europe [3]. In this way a clearer picture can be seen when it comes to the changes that happen in this region and by that it is possible to define the noticed regularities and development constants as well as directions of further research in this field.

Apart from monitoring chosen indicators of sustainable development in economic and ecological subsystems, the authors are also trying to develop the possibility to use the adequate statistical methods by which the free interpretation of the results would be reduced to minimum. By application of traditional statistic methods the phenomenon of sustainable development is becoming clearer and more predictable. In this way the authors can get an insight into the regularities of the relations that exist between the development of ecological and economic subsystems, which, at great extent, allow further strategic development of countries in the monitored region, taking into account that some of the noticed regularities can be tested and applied in other regions in the world.

2. Methodology of research

Sustainable development represents a compatible development of economic, ecological, social and institutional subsystem of development. The development of these subsystems can be monitored by measuring the value of over 400 [4], so far determined, indicators of sustainable development. In the countries of South Eastern Europe there are no adequate statistic data bases [5], nor there are adequate techniques for measuring so the authors chose to follow a smaller number of indicators. Also, the authors consider that, in order to get as precise results as possible, it is necessary to compare the degree of sustainable development to the results of development in France and Germany that represent some of the most developed countries in Europe and in the world. It was very important to consider if the regularities of relationship of development of economic and ecological subsystem are the same in the countries of South Eastern Europe as in France and Germany, due to the fact that these two groups of countries are significantly different not only as far as natural wealth is concerned but also as far as historical, economic, ecological and political development through the centuries is concerned.

In order to give highly useful research results, the authors decided to monitor the regularities in development of only two subsystems of sustainable development, ecological and economic subsystem. Namely, previous studies unambiguously pointed to the fact that these two subsystems are at the highest level of contrast and that all the countries that were monitored have the biggest problems in the attempt to achieve harmony of development between these two subsystems.

In accordance with the previous researches, and in regards to precision and availability of the data in the region of SE Europe, the authors decided to use the following indicators of sustainable development as the basis of their research (Table 1).

It was previously mentioned that at the moment there are 440 indicators in theoretical and practical use and that completely genuine results could be found only by monitoring all of these indicators in all four subsystems of sustainable development [6].

Table 1
Review of the used indicators of sustainable development.

Number, i_n	Economic indicator	Measure	Weight
1.	GDP/pc	$	25
2.	Debt	% GDP	5
3.	Road infrastructure	1000 km	5
4.	Inflation	%	10
5.	Gini coeficient	Index	10
6.	Growth of GDP	% GDP	5
7.	Investments as part of GDP	% GDP	5
8.	Industrial growth	%	5
9.	External debt	Bln $	10
10.	Export	Bln $	20
Number, i_n	**Ecological indicator**	**Measure**	**Weight**
11.	Fertile ground	%	5
12.	Ploughed ground	%	10
13.	Irigation	km^2	5
14.	Usage of fertiliyers	kg/ha/yr	5
15.	Organic agriculture	% of ploughed ground	5
16.	Usage of pesticides	kg/ha/yr	5
17.	Emission of methane	1000 metric tons	20
18.	Emission of carbon dioxide	metric tons	25
19.	Forestation	km^2	10
20.	Usage of energy	equiv. tons	10

Source: www.cia.gov/cia/factbook/geos/http://www.monstat.cg.yu/.

Nonetheless, finding the exact data about these indicators in the countries of SE Europe is not possible. Besides, there was certainly a possibility for authors to choose to monitor and evaluate other groups of indicators. At this point in time, the indicators used in this research are considered the most suitable ones because the data that they provide are valid and the most available ones. On the other hand, it was necessary to monitor the changes in values of certain indicators in respect to previously conducted researches.

Diversity, different units of measure and importance of some indicators required the development of a particular methodology by which these differences can be reduced to minimum and therefore any possible influence on the accuracy of the final result can be avoided.

Namely, each of chosen indicators shows the accomplished value in that particular field. In order to avoid the problem that is created when indicators are represented in different units of measure, all monitored indicators have been ranked based on their absolute value which was recorded for every country in the research sample. In other words, value 1 (that is -1) has been added to the country that shows the biggest absolute value for every monitored indicator. The remaining values that are in range from 1 to -1 will be added to the value of the remaining monitored countries.

On the other hand, it was necessary to resolve the problem of the individual importance that each monitored indicator has in respect to other indicators and hence the authors decided to use weight coefficients that are in range from 0 to 100. Having in mind that some indicators have a positive and others a negative influence on the complete economic and ecological degree of development, the assigned weight coefficients are marked with a positive that is with a negative mark.

A short review of the methodology used in this research is as follows:

Step 1. The choice of indicators from ecological and economic subsystem whose values will be used in the research.
Step 2. Determining the weight coefficient for every chosen indicator.
Step 3. To put on scale every single indicator in respect to the maximum absolute value, by which the problem of expressing the values in different units of measure is resolved.

Table 2
State of economic indicators of sustainable development (2006).

Indicator	Sign	GDP	Debt	Road infrast.	Inflation	Gini coeff.	Growth of GDP	Invest. in GDP	Industrial growth	External debt	Export
Measure		\$/pc	% GDP	1000 km	%	index	% GDP	% GDP	%	mrld. \$	mlrd. \$
Coeff. (W)		25	5	5	10.0	10	5	5	5	10	20
Albania	AL	5300	66.2	18.00	2.4	28.2	5.5	22.4	3.1	1.55	0.65
Bosnia and Herzegovina	BiH	5200	29	21.85	4.4	26.2	5.0	22.4	5.5	3.12	2.70
Bulgaria	BG	9600	31.9	102.00	5.0	31.9	5.5	23.8	7.3	15.32	11.67
Greece	GR	22,300	106.8	116.47	3.5	35.1	3.7	24.6	−0.3	75.18	18.54
Hungary	H	16,300	58.9	159.57	3.6	24.4	4.1	23.1	7.3	66.22	61.75
Macedonia	M	7800	33.7	8.68	0.0	28.2	4.0	18.3	6.8	2.19	2.05
Croatia	CR	12,400	49.7	28.34	3.3	29.0	4.3	28.6	5.1	30.62	10.30
Serbia	SRB	4400	53.1	37.89	15.5	35.0	5.9	14.2	1.4	15.43	1.55
Romania	RU	8100	20.3	11.38	9.0	28.8	4.1	24.3	1.9	35.68	27.72
Slovenia	SI	21,500	28.5	38.40	3.4	28.4	4.0	24.8	3.2	19.87	18.53
France	FR	29,600	66.2	891.29	1.7	32.7	1.2	19.6	0.2	2826	443.40
Germany	D	30,100	67.3	231.581	2.0	28.3	0.9	17.1	2.9	3626	1016.00

Step 4. Determining the relationship between economic and ecological development in monitored countries based on calculation of total, i.e. overall indicator.

Step 5. Considering and confirming the contrast between the achieved degree of economic and ecological development which can be accomplished by use of linear regression methodology on the results that were found in the previous step of the research.

Step 6. Determining the relationship between the economic and ecological development in these countries which is represented as a deviation of the achieved degree in comparison to the axis that would be gotten by traditional measuring.

3. Results of the research

3.1. Economic indicators of sustainable development in countries of South Eastern Europe

Having the insight into the latest statistic data, the review of the current values for indicators of economic and ecological subsystems of sustainable development was obtained. It is shown in Table 2.

The mentioned indicators have been put on scale based on the maximum absolute value which was recorded in the sample and they can be reviewed in Table 3.

By using a particular formula, which takes into account assigned weight coefficients,

$$I_1 = 25j_1 - 5j_2 + 5j_3 - 10j_4 + 10j_5 + 5j_6 + 5i_7 + 5j_8 - 10j_9 + 20j_{10}, \quad (1)$$

the current value of achieved economic development in the monitored countries was determined. The indicators j_k, $k = 1, \ldots, 10$ were scaled in the following way:

$$j_k = \frac{i_k}{\max\{|i_{k,l}|\}}, \quad (2)$$

where the index $l = 1, \ldots, 12$ refers to each and every monitored country in the sample. After determining the final value of the development of the economic subsystem (1) in a previously explained way, the determining of the current state of the development of economic subsystem in the monitored countries can be shown by Histogram No. 1 (Fig. 1).

The previous representation clearly points to the fact that the achieved degree of economic development, measured by the indicators of sustainable development, is very different in the observed countries. The best results, as expected, were found in France and Germany and very satisfactory results in Hungary and Greece. The biggest group of countries consists of the countries that have encountered a lot of problems, not only of economic nature. Similar results are found in the previous studies so this tendency shows how unrealistic it is to expect that bigger changes or improvements may happen in the near future as far as this field is concerned.

3.2. Ecological indicators of sustainable development in countries of South Eastern Europe

The second group of indicators that was observed in this research refers to the chosen indicators of state in the ecological subsystem of sustainable development. As expected, the worst

Table 3
State of scaled economic indicators of sustainable development (2006).

	Sign	GDP	Debt	Road infrast.	Inflation	Gini coeff.	Growth of GDP	Invest. in GDP	Industrial growth	External debt	Export
Coeff. (W)		25	−5	5	−10	10	5	5	5	−10	20
Albania	AL	0.18	0.62	0.02	0.15	0.80	0.93	0.78	0.42	0.00	0.00
Bosnia and Herzegovina	BiH	0.17	0.27	0.02	0.28	0.75	0.85	0.78	0.75	0.00	0.00
Bulgaria	BG	0.32	0.30	0.11	0.32	0.91	0.93	0.83	1.00	0.00	0.01
Greece	GR	0.74	1.00	0.13	0.23	1.00	0.63	0.86	−0.04	0.02	0.02
Hungary	H	0.54	0.55	0.18	0.23	0.70	0.69	0.81	1.00	0.02	0.06
Macedonia	M	0.26	0.32	0.01	0.23	0.80	0.68	0.64	0.93	0.00	0.00
Croatia	CR	0.41	0.47	0.03	0.21	0.83	0.73	1.00	0.70	0.01	0.01
Serbia	SRB	0.15	0.50	0.04	1.00	1.00	1.00	0.50	0.19	0.00	0.00
Romania	RU	0.27	0.19	0.01	0.58	0.82	0.69	0.85	0.26	0.01	0.03
Slovenia	SI	0.71	0.27	0.04	0.22	0.81	0.68	0.87	0.44	0.01	0.02
France	FR	0.98	0.62	1.00	0.11	0.93	0.20	0.69	0.03	0.78	0.44
Germany	D	1.00	0.63	0.26	0.13	0.81	0.15	0.60	0.40	1.00	1.00

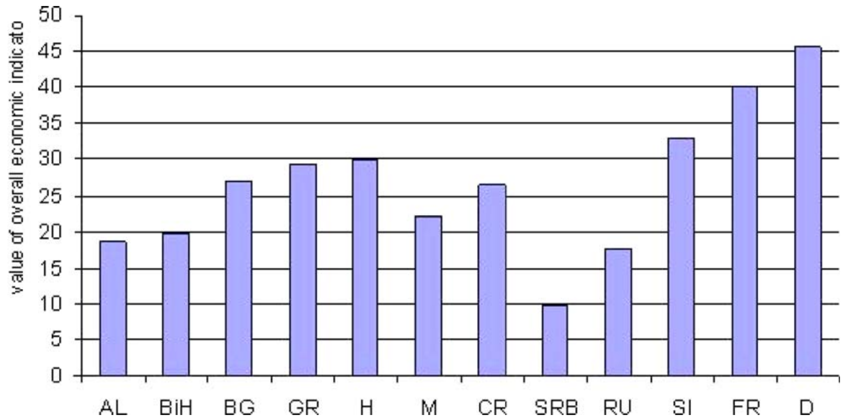


Fig. 1. State of overall economic indicator of sustainable development.

situation was recorded in the most developed countries of the sample, such as France and Germany. Unexpectedly bad results were recorded in Slovenia. The review of the value of indicators in this field is given in Table 4.

The mentioned indicators were scaled based on the highest absolute value recorded which was shown in Table 5.

Taking into account the particularity of ecological indicators, by using the following formula they were assigned the appropriate weight coefficients

$$I_2 = 5 \cdot i_{11} + 10 \cdot i_{12} + 5 \cdot i_{13} - 5 \cdot i_{14} + 5 \cdot i_{15} - 5 \cdot i_{16} - 20 \cdot i_{17} - 25 \cdot i_{18} + 10 \cdot i_{19} - 10 \cdot i_{20}, \quad (3)$$

The indicators in range j_k, $k = 11, \ldots, 20$ represent the scaled ecological indicators by

$$j_k = \frac{i_k}{\max\{|i_{k,l}|\}},$$

where the index $l = 1, \ldots, 12$ is valid for every monitored country. After determining the final value of development of economic subsystem (3) in the previously mentioned way, the determining of the current state of development of economic subsystem in the monitored countries can be represented by Histogram No. 2 (Fig. 2).

Table 4
State of environmental indicators of sustainable development.

Indicator	Sign	Fertile ground	Ploughed ground	Irrigation	Usage of fertiliz.	Organ. agricul.	Usage of pestic.	Emiss. of methane	Emission of carbon dioxide	Forestation	Usage of energy
Measure		%	%	km^2	kg/ha	%	kg/ha/	1000 metric tons	metric tons	km^2	equiv. tons
Coeff. (W)		5	10	5	5	5	5	20	25	10	10
Albania	AL	20.1	4.21	0.12	0.4	0.07	61	0.018	0.00011	0.028	595.43
Bosnia and Herzegovina	BiH	19.61	1.89	0.59	0.5	0.01	33	0.022	0.00027	0.1	988.22
Bulgaria	BG	29.94	1.9	0.005	0.9	0.23	49	0.009	0.00041	0.028	2696.44
Greece	GR	20.45	8.59	0.11	2.8	2.72	149	0.12	0.00066	0.086	2793.18
Hungary	H	49.58	2.06	0.025	2.4	2.19	109	0.12	0.0006	0.018	2639.38
Macedonia	M	20.01	1.79	0.022	0.8	0.02	39	0.05	0.00034	0.014	132.77
Croatia	CR	25.82	2.19	0.19	2.2	0.23	118	0.067	0.00033	0.024	1950.89
Serbia	SRB	22.1	60	0.12	0.8	0.37	91	0.1	0.00053	0.013	1723.43
Romania	RU	39.49	1.92	0.13	2.1	0.51	35	0.055	0.00039	0.059	1749.28
Slovenia	SI	8.53	1.43	1.48	6.8	4.55	416	0.12	0.00075	0.041	3487.06
France	FR	33.45	2.03	4.75	4.5	1.8	215	0.11	0.00068	0.063	4453.68
Germany	D	33.11	0.6	13.58	2.3	4.52	220	0.18	0.0024	0.07	4211.44

Table 5
State of scaled environmental indicators of sustainable development.

		Fertile ground	Ploughed ground	Irrigation	Usage of fertiliz.	Organ. agricul.	Usage of pestic.	Emiss. of methane	Emission of carbon dioxide	Forestation	Usage of energy
Coeff. (W)		5	10	5	−5	5	−5	−20	−25	10	−10
Albania	AL	0.41	0.49	0.01	0.06	0.02	0.15	0.10	0.05	0.28	0.13
Bosnia and Herzegovina	BiH	0.40	0.22	0.04	0.07	0.00	0.08	0.12	0.11	1.00	0.22
Bulgaria	BG	0.60	0.22	0.00	0.13	0.05	0.12	0.05	0.17	0.28	0.61
Greece	GR	0.41	1.00	0.01	0.41	0.60	0.36	0.67	0.28	0.86	0.63
Hungary	H	1.00	0.24	0.00	0.35	0.48	0.26	0.67	0.25	0.18	0.59
Macedonia	M	0.40	0.21	0.00	0.12	0.00	0.09	0.28	0.14	0.14	0.03
Croatia	CR	0.52	0.25	0.01	0.32	0.05	0.28	0.37	0.14	0.24	0.44
Serbia	SRB	0.45	0.70	0.01	0.12	0.08	0.22	0.56	0.22	0.13	0.39
Romania	RU	0.80	0.22	0.01	0.31	0.11	0.08	0.31	0.16	0.59	0.39
Slovenia	SI	0.17	0.17	0.11	1.00	1.00	1.00	0.67	0.31	0.41	0.78
France	FR	0.67	0.24	0.35	0.66	0.40	0.52	0.61	0.28	0.63	1.00
Germany	D	0.67	0.07	1.00	0.34	0.99	0.53	1.00	1.00	0.70	0.95

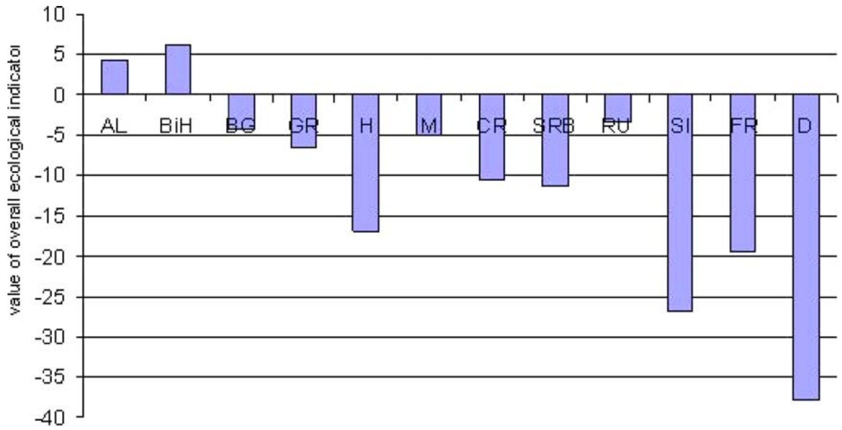


Fig. 2. State of overall environmental indicators of sustainable development.

3.3. Overall economic and ecological indicators of sustainable development in countries of South Eastern Europe

After the separate determination of state in ecological and economic subsystem, the state of the sustainable development was determined as a whole, which concerns the state in both monitored subsystems and their comparative values are given in Table 6.

The overall review of the degree of sustainable development in the observed countries show, above all, that the positive values of all ecological indicators have been recorded solely in Albania and Bosnia and Herzegovina. It needs to be said that these countries at the same time represent the countries which are at the lowest degree of economic development and where due to this fact in particular was not possible to exploit the natural resources and to pollute the environment. The given values are positive but they are close to zero.

In all other countries the negative values of ecological indicators were recorded, and they are rather far away from zero in their absolute value. The countries with the highest negative degree of development of ecological subsystem (France and Germany) are at the same time the countries with the highest degree of development of economic subsystem. In this group, somewhat unexpectedly there is also Slovenia, which shows a surprisingly high degree of development of economic subsystem.

On the whole, in most countries there is a visible negative development of ecological subsystem which means that in all sample countries there is overload of natural resources. By careful consideration of individual indicators we get an insight into the fact that this result is above all a consequence of irrational use of energy and uncontrolled emission of greenhouse gases. Each of these indicators has a high weight coefficient, being that they are considered as highly important ecologically, so that in the greatest amount they make this situation ecologically undesirable [7].

By further research the method of linear regression was applied to these results and it pointed to the fact that higher economic development, as expected, has as a consequence the lower degree of development of ecological subsystem seen as a whole. It is all represented in Fig. 3.

The determined coefficient R^2 is 0.58 which means that 58% of changes in the ecological subsystem can be directly caused by the changes in the economic subsystem. The results of regression analysis are given in Table 7.

After all the analyses that were conducted it was possible to determine the efficiency of the achieved degree of sustainable development in the countries from the research sample.

3.4. The degree of efficiency of strategy of sustainable development in countries of SE Europe

Considering the points of view that are known to the expert public the authors believe that during the determination of efficiency of the achieved degree of sustainable development it is of utmost importance to monitor the state in which economic and ecological subsystems are found at that moment. The choice of these two aforementioned subsystmes, as well as the choice of indicators inside them does not have as a goal to diminish the importance of other indicators from economic and ecological subsystem, neither to marginalize the process of monitoring in two other remaining subsystems of sustainable development – social and institutional.

Based on certain precise values of indicators of economic and ecological subsystem and with the use of statistic comparison, that includes the method of weight coefficients, the contradiction between the current state in the economic and ecological subsystem was expected. While the high significance of negative

Table 6
Overall economic and ecological indicators of sustainable development.

	I_1	I_2
AL	18.60	4.34
BiH	19.67	6.17
BG	26.92	−4.29
GR	29.31	−6.64
H	29.85	−16.97
M	22.01	−4.92
CR	26.52	−10.42
SRB	9.78	−11.22
RU	17.71	−3.34
SI	32.86	−26.81
FR	40.22	−19.44
D	45.66	−37.79

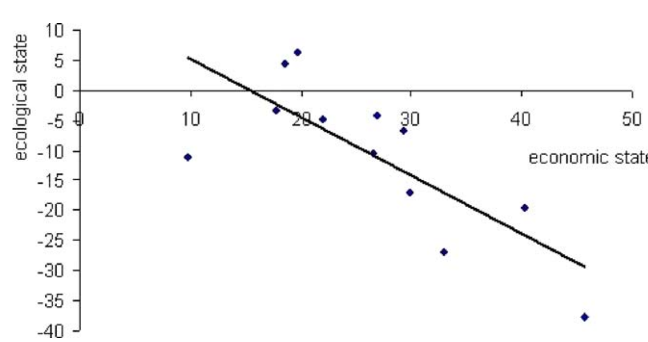


Fig. 3. Linear regression – economic vs. environmental state.

Table 7
Linear regression – statistical analysis.

Linear regression					$I_2 = 14.7548 - 0.9664I_1$
Regression statistics					
R			0.76		
R^2			0.58		
Adjusted R^2			0.54		
Standard error			8.58		
Total number of cases			12.00		
ANOVA					
	d.f.	SS	MS	F	p-Level
Regression	1.00	1028.28	1028.28	13.96	0.00
Residual	10.00	736.40	73.64		
Total	11.00	1764.68			
ANOVA					
	Coefficients	Standard error		t-Stat	p-Level
Intercept	14.75	7.31		2.02	0.07
Slope	−0.97	0.26		−3.74	0.00

slope (−0.97 with P-value 0.00) indicates negative correlation between current economic and ecological state, the high value of R^2 coefficient 0.58 verifies, in some way, the presented one-economic (ecological) indicator methodology described in Section 2.

If the degree of economic state (overall economic indicator) is represented on x-axis, and the degree of ecological state (overall ecological indicator) on y-axis, then the degree of the current economic-ecological development for each country can be represented as the point in such economic-ecological plane. The $y = -x$ axis represents the axis that can be marked as a traditionally measured axis of development that exists in the countries that neither take into consideration nor implement the necessary improvements that lead towards the sustainable development.

In accordance with what was said earlier, every positive orthogonal deviation (orthogonally above the axis) in respect to the traditionally measured axis can be treated as an improvement in the area of implementation of strategy of sustainable development in every given country. On the other hand, every negative orthogonal deviation (orthogonally below the axis) from the axis that represents traditionally measured development is seen as a negative tendency that appeared in the monitored country. Obviously, the area with the most efficient sustainable development is the area between the axis that shows the traditionally measured development and the positive side of x-axis (Fig. 4).

In the conducted research, the measure of efficiency of sustainable development for every monitored country is defined by its orthogonal distance from the axis of traditional development. If the country is located in the most efficient area of sustainable development the distance will be positive, whereas if the country is outside of the defined positive area, the distance will be marked and interpreted as negative.

Based on the previous picture several conclusions can be drawn. Above all, the shown review confirms the presumption that the economic development is almost always followed by the equal degree of ecological devastation [8]. Most countries from this monitored sample are in the most efficient area of the achieved degree of sustainable development. The only three countries that deviate from this sample are Serbia, Albania and Bosnia and Herzegovina. Serbia is located below this axis but it is almost on the axis that marks the degree of development measured on traditional way.

A special position was taken by Bosnia and Herzegovina and Albania. The values for monitored countries are located in the first square because of the minimum but a positive result of values of ecological and economic subsystem in the mentioned countries. This situation can be explained by a long hold-up in the economic development, because of which there was no need for exploitation of natural resources.

In Romania, Macedonia, Bulgaria, Greece and Slovenia the satisfactory relationship between the development of ecological and economic subsystem was recorded. However, it was somehow surprising that Greece was found in that position, being one of the first EU member countries, because it was expected to find a much higher degree of economic development. In Croatia, Hungary and Slovenia a more intensive economic growth was noticed but the ecological indicators are of bad quality which points to the fact that the strategies for sustainable development used in these countries were not able to exploit the natural resources and keep the pollution on a sustainable level. In these countries a lot of effort has been put to get nearer to the concept of sustainable development, however it is obvious that the economic development is still a priority.

In order to observe the current situation and to notice the needs in order to make some corrections, it was important to show the tendencies and deviations from those among the countries which was shown in Fig. 5.

Judging by Fig. 5 it can clearly be seen that Serbia is the only country where the negative degree of efficiency of sustainable development was recorded. The previously mentioned negative degree is not so important but it shows that at the moment Serbia is using more natural resources and produces greater pollution than expected given that economic development achieved in Serbia is at a very low level [9]. All of it points to the fact that current strategies need to be upgraded or changed and that they require further corrections and a more detailed monitoring [10].

The highest degree of efficiency of sustainable development was recorded in Bulgaria, Greece and France because it is obvious that their values are furthest away from the axis that represents the traditionally measured degree of development. In these countries it is clearly seen that the economic development does

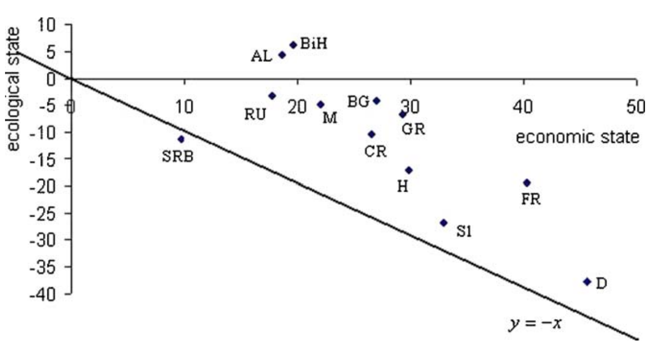


Fig. 4. Degree of efficiency of sustainable development.

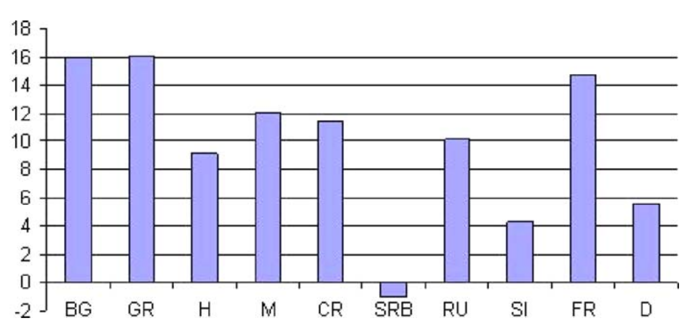


Fig. 5. Value of the degree of efficiency of sustainable development.

not have an exclusive importance and that the strategies of sustainable development give an expected, positive result.

Almost twice as lower efficiency degree of sustainable development was recorded in Hungary, Macedonia and Croatia whereas Slovenia takes even three times lower position in respect to the countries mentioned in the previous paragraph. These countries obviously have a positive tendency of sustainable development but there is an evident need to consider the reasons that put them in such an unsatisfactory position.

The authors paid a lot of attention to comparison of final results when it comes to the two most developed countries, France and Germany. These countries show almost identical degree of economic development but in France twice as efficient degree of sustainable development was recorded.

In the end the authors would like to point out that the results are based on monitoring the efficiency degree of sustainable development in its two subsystems, and therefore sustainable development is seen as some kind of two-dimensional system. Almost certainly, more precise results can be found by seeing the sustainable development as a four-dimensional system.

4. Conclusion

After all the researches done so far, the authors point out that there is a certain regularity in the relationship between ecological and economic development of some countries. The development of these two subsystems is definitely contradictory, nevertheless the research shows that there is a possibility to lessen the negative relationship in development of these two subsystems, in case that the country puts in some real effort. Economic development of a particular country does not always have to lead towards the proportional destruction of natural resources [11].

Considering recent research of sustainable development and research presented in this paper, authors emphasize necessity for determining an overall indicator of the current economic state, i.e. of the current ecological state. In the purpose to define the degree of sustainable development, i.e. the degree of efficiency of strategy of sustainable development, presented research suggests a promising method, which consider the importance (weight) of single economic (ecological) indicator, as well as the influence (positive or negative) of such indicator on the overall economic (ecological) state [12]. Supported by the linear regression analysis, obtained results indicate expected collision between the degree of economic and ecological state, but also raise some interesting questions.

The final result of the research is largely decided by the choice of indicators, as well as by the weight coefficients that were assigned to them. That is the field where at the moment there is no scientific and expert consensus. There is a possibility that some weight coefficients cannot be precisely defined, and that they are susceptible to changes throughout time similarly to the change of certain indicators.

All these results show to the need for further theoretical and practical monitoring and interpreting of sustainable development indicators, with defining the adequate weight coefficients as well as determining statistical methods that can point out the regularities among them, in order to get the results that will have scientific and practical value as well. In this way, the determined efficiency degree of sustainable development gives an insight into the present state and allow making decisions when it comes to strategic direction of every country and SE Europe region as a whole.

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